



General Assembly

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COMMITTEE ON THE PEACEFUL USES
OF OUTER SPACE
Scientific and Technical Sub-Committee
Twenty-seventh session

PROVISIONAL AGENDA WITH ANNOTATIONS*

Twenty-seventh session, to be convened at United Nations Headquarters,
on Monday, 26 February 1990, at 10.30 a.m.

1. Adoption of the agenda.
2. Statement by the Chairman.
3. General exchange of views.
4. United Nations Programme on Space Applications and the co-ordination of space activities within the United Nations system.
5. Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space.
6. Matters relating to remote sensing of the Earth by satellites including, inter alia, applications for developing countries.
7. Use of nuclear power sources in outer space.
8. Questions relating to space transportation systems and their implications for future activities in space.

* Items 4 to 7 should be given priority in accordance with paragraph 8 of General Assembly resolution 44/46 of 8 December 1989.

9. Examination of the physical nature and technical attributes of the geostationary orbit; examination of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to space communications developments, taking particular account of the needs and interests of developing countries.
10. Matters relating to life sciences, including space medicine.
11. Progress in the geosphere-biosphere (global change) programme.
12. Matters relating to planetary exploration.
13. Matters relating to astronomy.
14. The theme fixed for special attention at the 1990 session of the Scientific and Technical Sub-Committee: "The use of space technology in terrestrial search and rescue and in disaster relief activities".
15. Other matters.
16. Report to the Committee on the Peaceful Uses of Outer Space.

ANNOTATIONS

Items 1, 2 and 3. Adoption of the agenda

Statement by the Chairman

General exchange of views

1. Following the adoption of the agenda by the Sub-Committee, the Chairman will make a statement reviewing developments of relevance to the work of the Sub-Committee which have taken place since its twenty-sixth session.
2. Following the statement of the Chairman, the Sub-Committee will organize a schedule of work (see annex for provisional schedule of work).

Item 4. United Nations Programme on Space Applications and the co-ordination of space activities within the United Nations system

3. The General Assembly, in paragraph 8 of its resolution 44/46 of 8 December 1989, endorsed the recommendation of the Committee that the Sub-Committee should continue to consider this item on a priority basis.

(a) Report of the Expert on Space Applications

4. The views of the Sub-Committee regarding the United Nations Programme on Space Applications were set out in paragraphs 25 to 38 of its report (A/AC.105/429). The

views of the Committee on the Peaceful Uses of Outer Space on the report of the Sub-Committee on this item were reflected in paragraphs 35 to 44 of the report of the Committee. 1/

5. The Sub-Committee will have before it the report of the Expert covering the implementation of the Programme on Space Applications during 1989 and 1990, as well as a projection of programmes for 1991 (A/AC.105/446).

6. In addition, the Sub-Committee will have before it reports on the United Nations/Food and Agriculture Organization of the United Nations (FAO)/European Space Agency (ESA) Meeting of Experts on Remote Sensing and Satellite Meteorology Applications to Marine Resources and Coastal Management in the Atlantic Coast of Africa Region, held at Maspalomas, Spain, from 8 to 12 May 1989 (A/AC.105/436); the fifth United Nations/FAO/World Meteorological Organization (WMO)/ESA Training Course on the Use of Remote Sensor Systems in Agrometeorological and Hydrological Applications, held at Canberra from 15 May to 2 June 1989 (A/AC.105/437); the United Nations International Meeting of Experts on the Development of Remote-Sensing Skills and Knowledge, held at Dundee, United Kingdom, from 26 to 30 June 1989 (A/AC.105/438); the United Nations Indian Ocean Marine Affairs Co-operation Conference (IOMAC) Workshop on Oceanographic/Marine Space Information Systems, held at Karachi, Pakistan, from 2 to 6 July 1989 (A/AC.105/439); the United Nations Training Course on Remote Sensing Data in Agriculture Management, held in Moscow, from 25 September to 6 October 1989 (A/AC.105/440); the second United Nations International Training Course on Remote Sensing Applications to Geological Sciences, held at Potsdam, German Democratic Republic, from 5 to 22 October 1989 (A/AC.105/441); and the fourteenth United Nations/FAO International Training Course on Remote Sensing Applications to Land Resources, held in Rome, from 6 to 14 November 1989 (A/AC.105/442).

(b) Report of the Secretary-General on co-ordination of space activities within the United Nations system

7. The eleventh Ad Hoc Inter-Agency Meeting on Outer Space Activities was held at Geneva, from 27 to 29 September 1989. The report of that meeting was issued in document ACC/1989/PG/8. The report on co-ordination is contained in the document entitled "Co-ordination of outer space activities within the United Nations system: programmes of work for 1990 and 1991 and future years" (A/AC.105/444).

Item 5. Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space

8. The General Assembly, in paragraph 8 of resolution 44/46, endorsed the recommendation of the Committee that the Sub-Committee should continue to consider this item on a priority basis.

9. The views of the Sub-Committee regarding the item were provided in paragraphs 17 to 48 of its report (A/AC.105/429). The views of the Committee on the report of the Sub-Committee on the item are contained in paragraphs 26 to 53 of the Committee's report. 1/

10. In connection with the item, attention is also drawn to the report of the Secretary-General on the implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (A/44/469) and to the report of the Expert on Space Applications concerning the implementation of the United Nations Programme on Space Applications (A/AC.105/446).

11. The General Assembly, in paragraph 10 of resolution 44/46, endorsed the recommendation of the Committee that the Working Group of the Whole to Evaluate the Implementation of the Recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space should be reconvened by the Sub-Committee at its current session.

12. The General Assembly, in paragraph 11 of resolution 44/46, endorsed the recommendations of the Working Group of the Whole as endorsed by the Committee and as contained in paragraphs 4, 5 and 6 of the report of the Working Group of the Whole (A/AC.105/429, annex II). In this connection, the Sub-Committee will have before it a report on the implementation of the recommendations in paragraphs 4 (c) and 5 (a) containing the replies of Member States in response to a note verbale sent out by the Secretary-General on 30 June 1989 (A/AC.105/448) and a report on the implementation of the recommendation in paragraph 4 (d) containing the replies of international organizations in response to a letter of the Chief of the Outer Space Affairs Division dated 22 June 1989 (A/AC.105/449). The Sub-Committee will also have before it a report on the recommendations in paragraphs 4 (a), (e), (f), (j), and (k) and 5 (c) and (d) (A/AC.105/454). The information requested in paragraph 4 (h) will be included in the Expert's report on the implementation of the Space Application Programme as cited above (A/AC.105/446), which will also contain information on the recommendation in paragraph 5 (d). The Sub-Committee will also have before it a report on the recommendations in paragraphs 5 (b) (A/AC.105/450) and 6 (A/AC.105/451).

13. In considering agenda item 5, the Sub-Committee should note that, in paragraph 9 of resolution 44/46, the General Assembly stated that:

"it is particularly urgent to implement the following recommendations:

"(a) All countries should have the opportunity to use the techniques resulting from medical studies in space;

"(b) Data banks at the national and regional levels should be strengthened and expanded and an international space information service should be established to function as a centre of co-ordination;

"(c) The United Nations should support the creation of adequate training centres at the regional level, linked, whenever possible, to institutions implementing space programmes; necessary funding for the development of such centres should be made available through financial institutions;

"(d) The United Nations should organize a fellowship programme through which selected graduates or post-graduates from developing countries should get in-depth, long-term exposure to space technology or applications; it is

also desirable to encourage the availability of opportunities for such exposures on other bilateral and multilateral bases outside the United Nations system".

Item 6. Matters relating to remote sensing of the Earth by satellites including, inter alia, applications for developing countries

14. The General Assembly, in paragraph 8 of resolution 44/46, endorsed the recommendation of the Committee that the Sub-Committee should continue to consider this item on a priority basis.

Item 7. Use of nuclear power sources in outer space

15. The General Assembly, in paragraph 8 of resolution 44/46, endorsed the recommendations of the Committee that the Scientific and Technical Sub-Committee should continue to consider this item on a priority basis.

16. The Sub-Committee will have before it a report on the implementation of the recommendations contained in paragraph 12 of the report of the Working Group on the Use of Nuclear Power Sources in Outer Space (A/AC.105/429, annex III) containing the replies of Member States to a note verbale sent out by the Secretary-General on 30 June 1989 (A/AC.105/C.1/WG.5/L.24).

17. The General Assembly, in paragraph 12 of the same resolution, decided that the Working Group on the Use of Nuclear Power Sources in Outer Space should be reconvened during the current session of the Sub-Committee.

Item 8. Questions relating to space transportation systems and their implications for future activities in space

18. The General Assembly, in paragraph 8 of resolution 44/46, endorsed the recommendation of the Committee that the Sub-Committee should continue consideration of this item at its current session.

Item 9. Examination of the physical nature and technical attributes of the geostationary orbit; examination of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to space communications developments, taking particular account of the needs and interests of developing countries

19. The General Assembly, in paragraph 8 of resolution 44/46, endorsed the recommendation of the Committee that the Sub-Committee should continue to consider this item at its current session.

Item 10. Matters relating to life sciences, including space medicine

20. The General Assembly, in paragraph 8 of resolution 44/46, endorsed the recommendation of the Committee that the Sub-Committee should continue the consideration of this item at its current session.

Item 11. Progress in the geosphere-biosphere (global change) programme

21. The General Assembly, in paragraph 8 of resolution 44/46, endorsed the recommendation of the Committee that the Sub-Committee should continue the consideration of this item at its current session.

22. In accordance with the same resolution, the Committee on Space Research (COSPAR) and the International Astronautical Federation (IAF) have been invited to present reports and arrange a special presentation on this subject (see note a of the annex to the present provisional agenda).

Item 12. Matters relating to planetary exploration

23. The General Assembly, in paragraph 8 of resolution 44/46, endorsed the recommendation of the Committee that the Sub-Committee should continue the consideration of this item at its current session.

Item 13. Matters relating to astronomy

24. The General Assembly, in paragraph 8 of resolution 44/46, endorsed the recommendation of the Committee that the Sub-Committee should continue the consideration of this item at its current session.

Item 14. The theme fixed for the special attention of the 1990 session of the Scientific and Technical Sub-Committee: "The use of space technology in terrestrial search and rescue and in disaster relief activities"

25. The General Assembly, in paragraph 8 of resolution 44/46, endorsed the recommendation of the Sub-Committee, which had been endorsed by the Committee, that the theme fixed for the special attention of the Sub-Committee at its current session should be "The use of space technology in terrestrial search and rescue and in disaster relief activities".

26. In accordance with the same resolution, COSPAR and IAF have been invited to arrange a symposium, with as wide a participation as possible, on this theme which will be held during the first week of the session, after the adjournment of the Sub-Committee's meeting, to complement its discussions (see note c of the annex to the present provisional agenda).

Item 15. Other matters

27. The General Assembly, in paragraph 22 of resolution 44/46, recommended that "more attention should be paid to all aspects related to the protection and the preservation of the outer space environment, especially those potentially affecting the Earth's environment".

28. The General Assembly, in paragraph 23 of resolution 44/46, considered that "it is essential that Member States pay more attention to the problem of collisions with space debris and other aspects of space debris", and called for the continuation of national research on this question.

29. The Sub-Committee will also have before it the following documents:

- (i) Progress of space research 1988-1989, report submitted by COSPAR (A/AC.105/452);
- (ii) Highlights in space technology 1989, report submitted by IAF (A/AC.105/453).

Notes

1/ Official Records of the General Assembly, Forty-fourth Session, Supplement No. 20 (A/44/20).

Annex

PROVISIONAL SCHEDULE OF WORK*

<u>Date</u>	<u>Morning</u>	<u>Afternoon</u>
Monday, 26 February	Item 1 - Adoption of the agenda Item 2 - Statement by the Chairman Item 3 - General exchange of views	Item 3 - General exchange of views Item 11 - Geosphere-biosphere programme <u>d/</u>
Tuesday, 27 February	Item 4 - United Nations Programme on Space Applications	Item 5 - UNISPACE 82 <u>b/</u> Item 14 - The use of space technology in terrestrial search and rescue and in disaster relief activities <u>c/</u>
Wednesday, 28 February	Item 4 - United Nations Programme on Space Applications Item 5 - UNISPACE 82 <u>b/</u>	Item 4 - United Nations Programme on Space Applications Item 5 - UNISPACE 82 <u>b/</u> Item 14 - The use of space technology in terrestrial search and rescue and in disaster relief activities <u>c/</u>
Thursday, 1 March	Item 4 - United Nations Programme on Space Applications Item 5 - UNISPACE 82 <u>b/</u>	Item 8 - Space transportation Item 9 - Geostationary orbit
Friday, 2 March	Item 10 - Life sciences Item 12 - Planetary exploration Item 13 - Astronomy	Item 10 - Life sciences Item 12 - Planetary exploration Item 13 - Astronomy
Monday, 5 March	Item 6 - Remote sensing Item 7 - Nuclear power sources <u>d/</u>	Item 6 - Remote sensing Item 7 - Nuclear power sources <u>d/</u>
Tuesday, 6 March	Item 7 - Nuclear power sources <u>d/</u>	Item 7 - Nuclear power sources <u>d/</u>
Wednesday, 7 March	Item 7 - Nuclear power sources <u>d/</u>	Item 7 - Nuclear power sources <u>d/</u>
Thursday, 8 March	Item 15 - Other matters	Item 7 - Nuclear power sources <u>d/</u> Item 15 - Other matters
Friday, 9 March	Item 16 - Report to the Committee	Item 16 - Report to the Committee

* The provisional schedule of work has been prepared in consultation with the Chairman of the Sub-Committee.

a/ In accordance with paragraph 8 of General Assembly resolution 44/46, COSPAR and IAF will submit reports and arrange a special presentation on progress in the geosphere-biosphere (global change) programme on 6 March.

b/ The Working Group of the Whole, to be re-established under resolution 44/46, paragraph 10 (see para. 11 of the present provisional agenda), will meet during the period allocated for agenda items 4 and 5.

c/ In accordance with paragraph 8 of General Assembly resolution 44/46, a scientific symposium on the theme "The use of space technology in terrestrial search and rescue and in disaster relief activities", sponsored by COSPAR and IAF, will be held in two sessions on 26 and 27 February, following the adjournment of the afternoon meeting of the Sub-Committee. (A detailed programme for the symposium will be issued in due course.)

d/ The Working Group on the Use of Nuclear Power Sources in Outer Space, to be re-established under resolution 44/46, paragraph 12 (see para. 17 of the present provisional agenda), will meet during the period allocated for agenda item 7.



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COMMITTEE ON THE PEACEFUL USES
OF OUTER SPACE
Scientific and Technical Sub-Committee
Twenty-seventh session

INFORMATION ON ACTIVITIES BEING PLANNED IN THE USSR IN CONNECTION WITH INTERNATIONAL SPACE YEAR

An organizational committee headed by Academician V. A. Kotelnikov, the Chairman of the USSR Academy of Sciences INTERCOSMOS Council, has been set up in the USSR to prepare for International Space Year. So far it has held two meetings, at which it has discussed a plan of activities to be carried out in preparation for the Year. The plan was compiled on the basis of suggestions by the Ministries, government departments, enterprises and organizations concerned; it calls for international conferences and seminars on the most current problems in space research to be held in the USSR in 1991 and 1992, for custom launches of Soviet spacecraft carrying assemblies of scientific instruments, and for a range of measures to keep the Soviet and foreign public extensively informed about the progress of space programmes and projects to benefit science and the various sectors of the economy.

The intention is to consider the major part of the plans of action recommended as the Soviet contribution to the international "Mission to planet Earth" programme, which defines the thrust of the International Space Year.

1. In view of the orientation of the International Space Year, and with special regard for space research on natural resources and environmental questions, Soviet scientists in conjunction with experts from the socialist countries are developing a comprehensive scientific research programme for the "Priroda" ("Nature") project. This programme, after thorough discussion, as decided by the conference of heads of the socialist countries' national co-ordinating bodies on the INTERCOSMOS programme, will represent a substantial contribution by those countries to the International Space Year.

Under the "Priroda" project, a specialized module, Priroda, will be launched by GLAVKOSMOS in 1991-1992 and dock with the Mir manned orbital station. It will carry a package of scientific apparatus for investigating:

(a) The composition, temperature, transparency, and natural and man-made pollution of the Earth's atmosphere;

(b) The distribution of temperature ranges, ice cover, and the extent and level of pollution in surface water and the oceans;

(c) Special features associated with the testing of techniques for mapping geological formations, forest conditions and agricultural crops in various parts of the world;

(d) Cyclone formation, development and decay in the Earth's atmosphere.

To enable these investigations to be carried out, the scientific apparatus aboard Priroda will be capable of the following operations:

(a) Active and passive radiophysical operations using a radiometric system functioning in the super-high frequency range, scanning polarimeters, a scanning radiometer, a twin-frequency side-looking radar and a precision radioaltimeter;

(b) Infrared spectroradiometric operations using a spectroradiometric system in the spectrometer;

(c) Spectroradiometric investigations of reflected solar radiation in the surface-atmosphere system using a visible and near-infrared spectrometry system.

The programme as elaborated identifies specific executing agencies and target dates for the main activities associated with International Space Year.

2. An international colloquium on solar processes affecting the environment and many important fields of human activity, including crop yields, power supply networks etc., is planned for August-September 1992 in Dnepropetrovsk; it will be based on the findings of multidisciplinary investigations of the sun and sun-Earth interactions during the solar maximum conducted using unmanned universal orbital stations (the international "Apex" and "Coronas" projects).

3. A scientific conference on the most pressing problems associated with the use of remote-sensing methods to benefit various economic sectors is planned for mid-1992.

4. During the period 1991-1992 it is planned to launch Meteor meteorological satellites carrying Franco-Soviet ScaRaB apparatus (project "Radiation balance") and American ozone-measuring equipment (project "TOMS").

5. In addition, activities have been planned in which United Nations involvement would be appropriate:

(a) An international gathering of young cosmonauts, scientists and experts on the peaceful conquest of space (Moscow, 1992);

(b) A series of scientific experiments suggested by young researchers (students, schoolchildren) from developing countries, to be conducted aboard Mir in 1991 and 1992;

(c) An international conference, "Space and the overall problems confronting mankind on the threshold of the 21st century" (Moscow, 1992);

(d) Imaging the territory of a number of developing countries from space and making the results available to those countries (two or three per region) gratis;

(e) An international seminar for developing countries on space communications (Dubna-Intercosmos International Experimental Satellite Communications Centre, 1992);

(f) A mobile exhibition on the achievements of the Soviet space effort: this might be inaugurated during the IAF-COSPAR Congress in Washington, then displayed in the United Nations building.

This list of activities may be amended in the light of the executing agencies' financial and organization scope. In the event of amendments, the organizational committee will duly notify the Sub-Committee.



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COMMITTEE ON THE PEACEFUL USES OF
OUTER SPACE
Scientific and Technical Sub-Committee
Twenty-seventh session
Agenda item 11

PROGRESS IN THE GEOSPHERE-BIOSPHERE (GLOBAL CHANGE) PROGRAMME

Union of Soviet Socialist Republics: Working paper

The "ALMAZ" ("diamond") programme calls for the establishment of an Earth and ocean remote sensing system to study natural resources, monitor the environment and perform other tasks for the benefit of the economy.

The system comprises the "ALMAZ" orbital space station, relay satellites, and ground receiving and data-processing stations.

The "ALMAZ" orbital station is a multipurpose space platform for carrying scientific apparatus.

Basic data on the "ALMAZ" station are given below.

Carrier rocket	PROTON
Working orbit parameters:	
Altitude	300-600 km
Inclination	73°
Mass in orbit	18,500 kg
Mass of on-board scientific apparatus	up to 4,000 kg
Power supply:	
Available power (minimum)	2,400 W
Maximum power (peak load, up to 15-20 minutes)	7,500-10,000 W
Active lifetime	2-3 years

Pointing and stabilization accuracy:

Pointing accuracy	10-15 arc minutes
Stabilization accuracy	3-4 arc minutes
Pointing accuracy while instruments are functioning	1 arc minute
Working compartment, volume	90 cubic metres
Temperature stability within working compartment in temperature range +5° C to +30° C	+ 1° C

The first "ALMAZ"-series station (Cosmos-1870) was in orbit for two years, from 25 July 1987 to 30 July 1989. The purpose of the launch was to test the construction of the station and component systems and how the station interacted with ground control, data-collection and data-processing stations.

The station carried a synthetic aperture radar with a resolution capability of 25 metres. Tests of the station were completed successfully. A large volume of radar information was obtained for use in geology, oceanology, cartography, geophysics, ecology, agriculture and forestry.

A data bank has been established, which may be consulted by interested States and organizations.

The launch of the second "ALMAZ" station is planned for the second half of 1990. The station is complete, and is undergoing ground tests. It has been fitted with a more sophisticated radar with a resolution capability of 15 metres, and a three-band scanning-type radiometry system.

The "ALMAZ" station can be used as the basis for an international environmental-monitoring space laboratory. It is assumed that the station might carry the following remote sensing apparatus:

- A high-resolution radar system;
- A multiband radiometry system;
- A scatterometer operating in the 5.7 centimetre range;
- A high-precision radio altimeter (accurate to 10 centimetres);
- A high-precision IR radiometer operating in the 3.5-3.9 and 8-12.5 μm ranges;
- A UV scanner operating in the 0.25-0.4 μm range;
- A multiband, multichannel scanning lidar instrument operating in the 351-1,064 μm range.

Other equipment can also be installed. In the future, "ALMAZ"-series stations may be fitted with the equipment to enable other spacecraft to dock with them and, if necessary, allow cosmonauts to visit the station, check how the equipment is functioning and carry out maintenance and repair work.

The launch of the third "ALMAZ" station is planned for 1994.

All interested States, research organizations and firms, scientists and experts are invited to consider adding their own scientific apparatus to "ALMAZ"-series stations and becoming involved in analysing and using the information obtained.

The United Nations could also help to carry this programme out more effectively.

The establishment of an international environmental-monitoring space laboratory operating under United Nations auspices would be a fine example of international co-operation for the benefit of all countries and peoples.

The lead organization for the "ALMAZ" programme is the Scientific Production Machine-Building Association, 143952 Reutov, Moscow region, USSR. Address correspondence to Dr. Herbert A. Yefremov.

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COMMITTEE ON THE PEACEFUL USES
OF OUTER SPACE
Scientific and Technical Sub-Committee

DRAFT REPORT OF THE SCIENTIFIC AND TECHNICAL SUB-COMMITTEE ON THE WORK OF ITS TWENTY-SEVENTH SESSION

INTRODUCTION

1. The Scientific and Technical Sub-Committee of the Committee on the Peaceful Uses of Outer Space held its twenty-seventh session at United Nations Headquarters from 26 February to 9 March 1990 under the chairmanship of Professor J. H. Carver (Australia).
2. Representatives of the following Member States attended the session: Argentina, Australia, Austria, Belgium, Benin, Brazil, Bulgaria, Burkina Faso, Canada, Chile, China, Colombia, Czechoslovakia, Ecuador, Egypt, France, German Democratic Republic, Germany, Federal Republic of, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Italy, Japan, Lebanon, Mexico, Mongolia, Morocco, Netherlands, Nigeria, Pakistan, Philippines, Poland, Portugal, Romania, Sweden, Syrian Arab Republic, Turkey, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay, Venezuela, Viet Nam and Yugoslavia.
3. Representatives of the Department of Technical Co-operation for Development of the United Nations Secretariat, the United Nations Environment Programme (UNEP), the Office of the United Nations Disaster Relief Co-ordinator (UNDRO) and the Centre for Science and Technology for Development also attended the session.
4. Representatives of the following specialized agencies attended the session: Food and Agriculture Organization of the United Nations (FAO), International Telecommunication Union (ITU), World Health Organization (WHO), World Meteorological Organization (WMO), International Atomic Energy Agency (IAEA) and United Nations Educational, Scientific and Cultural Organization (UNESCO).

5. Representatives of the European Space Agency (ESA), the Committee on Space Research (COSPAR) of the International Council of Scientific Unions (ICSU), the International Astronautical Federation (IAF), the International Maritime Satellite Organization (INMARSAT), the International Organization for Space Communications (INTERSPUTNIK), the International Telecommunications Satellite Organization (INTELSAT) and the Council on International Co-operation in the Study and Utilization of Outer Space (INTERCOSMOS) also attended the session.

6. A list of the representatives of Member States, specialized agencies and other international organizations attending the session is contained in document A/AC.105/C.1/INF/19.

7. At the opening of the session, the Sub-Committee adopted the following agenda:

1. Adoption of the agenda.
2. Statement by the Chairman.
3. General exchange of views.
4. United Nations Programme on Space Applications and the co-ordination of space activities within the United Nations system.
5. Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space.
6. Matters relating to remote sensing of the Earth by satellites, including, inter alia, applications for developing countries.
7. Use of nuclear power sources in outer space.
8. Questions relating to space transportation systems and their implications for future activities in space.
9. Examination of the physical nature and technical attributes of the geostationary orbit; examination of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to space communications developments, taking particular account of the needs and interests of developing countries.
10. Matters relating to life sciences, including space medicine.
11. Progress in the geosphere-biosphere (global change) programme.
12. Matters relating to planetary exploration.
13. Matters relating to astronomy.
14. The theme fixed for special attention at the 1990 session of the Scientific and Technical Sub-Committee: "The use of space technology in terrestrial search and rescue and in disaster relief activities".

15. Other matters.

16. Report to the Committee on the Peaceful Uses of Outer Space.

Meetings and documentation

8. The Sub-Committee held ... meetings.

9. A list of the documents which were before the Sub-Committee is provided in annex I to the present report.

10. At the opening meeting, the Chairman made a statement outlining the work of the Sub-Committee at its current session. He also reviewed the activities of Member States in the field of space exploration, including important advances that had been achieved as a result of international co-operation during the past year.

11. At the 371st, 373rd and 374th meetings, the Chairman informed the Sub-Committee that requests had been received from the permanent representatives of Bolivia, Costa Rica, Greece, Spain, Cuba and Malaysia, as well as from the Permanent Observer of the Holy See, to attend the session. Following past practice, those delegations were invited to attend the current session of the Sub-Committee and to address it as appropriate. This was without prejudice to further requests of that nature and did not involve any decision of the Sub-Committee concerning status, but was a courtesy that the Sub-Committee extended to those delegations.

12. General statements were made by the following delegations: Austria, Brazil, China, Czechoslovakia, Germany, Federal Republic of, German Democratic Republic, India, Indonesia, Iraq, Japan, Pakistan, USSR, United States, as well as by Costa Rica. Statements were also made by the representatives of ITU, ESA, COSPAR, IAF, INTERSPUTNIK, INTELSAT and INTERCOSMOS.

13. At the 371st meeting, the Chief of the Outer Space Affairs Division made a statement reviewing the work programme of the Outer Space Affairs Division. At the 372nd meeting, he made a statement concerning the programme budget for the biennium 1990-1991, which had been approved by the General Assembly at its 44th session, and the medium-term plan for the period 1992-1997, which would be presented to the General Assembly at its forty-fifth session. At the 373rd meeting, the Expert on Space Applications made a statement outlining the activities carried out and planned under the United Nations Programme on Space Applications.

Technical presentations

14. In accordance with paragraph 8 (b) (vii) of General Assembly resolution 44/46 of 8 December 1989, a symposium on the theme "The use of space technology in terrestrial search and rescue and in disaster relief activities", sponsored by IAF and COSPAR, was held in two sessions. The first session of the symposium was introduced by the Vice-President of IAF, Mr. James Harford, and chaired by

Mr. Burton Edelson, Co-Chairman of the IAF Committee for the International Space Year. It included an overview by Mr. Louis Walter of the United States National Aeronautics and Space Administration (NASA); and presentations by Mr. Wilbur Pritchard of W. L. Pritchard and Co., United States, on "Communications During Disasters"; and Mr. Ted Engman of the United States Department of Agriculture, on "Severe Floods", co-authored with Mr. A. Rango. The second session was introduced by Mr. A. J. Somogyi of COSPAR and chaired by Mr. George Ohring, Chairman of the COSPAR Commission on Space Studies of Earth's Surface, Meteorology and Climate. It included presentations by Mr. Louis Walter of NASA on droughts, Mr. Shui-shang Chi of the State University of New York at Buffalo, United States, on "Severe Storms", co-authored with Mr. George C. Lee and Mr. Ching-yen Tsay; Mr. James T. Bailey of the United States National Oceanic and Atmospheric Administration (NOAA), on "Search and Rescue", and Mr. Valery Bogdanov of the USSR V/O Morsviazsputnik on "COSPAS-SARSAT: Status and Future Developments". In accordance with paragraph 7 (b) (iv) of General Assembly resolution 43/56 of 6 December 1988, Dr. S. Ichtiaque Rasool of NASA, on behalf of COSPAR, made a presentation on the International Geosphere-Biosphere (Global Change) Programme.

15. During the session of the Sub-Committee, in addition to the COSPAR/IAF symposium, special scientific and technical presentations were made by Dr. M. G. Chandrasekhar of the Indian Space Research Organization, on the use of space technology for terrestrial search and rescue and disaster mitigation and on India's geosphere-biosphere research; by Mr. Donald Hinsman of WMO, on WMO's participation in the International Decade for Natural Disaster Reduction; by Dr. Walter Göbel of the Federal Republic of Germany Space Research Institute, on a distress alert system using the Inmarsat satellites; by Mr. Frank Owens and Ms. Elaine Schwartz of NASA, on NASA's educational programmes; by the United States astronaut, Ron Grabe, on his recent Space Shuttle mission that launched the Magellan spacecraft; by Dr. Alan Bunner of NASA, on NASA's space-based astronomy programmes; by Dr. Gordon Pettingill of the Massachusetts Institute of Technology, United States, on the Magellan Venus radar mapping mission; by Dr. Marianne von Glehn of the Swedish National Space Board, on the Swedish remote sensing programme; by Mr. Vladimir Spiridonov of INMARSAT, on the INMARSAT search and rescue capability; by Dr. Krishna Rao of NOAA, on remote sensing; by Mr. Shabir Ahmed of the Canadian Space Agency, on the Radarsat project; and by Dr. Stan Wilson of NASA, on ocean remote sensing and the United States Earth Observing System.

Recommendations of the Scientific and Technical Sub-Committee

16. After considering the various items before it, the Sub-Committee, at its ...th meeting, on 9 March 1990, adopted its report to the Committee on the Peaceful Uses of Outer Space containing its views and recommendations as set out in the paragraphs below.



General Assembly

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ORIGINAL: ENGLISH

COMMITTEE ON THE PEACEFUL USES
OF OUTER SPACE
Scientific and Technical Sub-Committee

DRAFT REPORT OF THE SCIENTIFIC AND TECHNICAL SUB-COMMITTEE
ON THE WORK OF ITS TWENTY-SEVENTH SESSION

Addendum

- I. UNITED NATIONS PROGRAMME ON SPACE APPLICATIONS AND THE
CO-ORDINATION OF SPACE ACTIVITIES WITHIN THE UNITED
NATIONS SYSTEM
- II. IMPLEMENTATION OF THE RECOMMENDATIONS OF THE SECOND
UNITED NATIONS CONFERENCE ON THE EXPLORATION AND
PEACEFUL USES OF OUTER SPACE

1. The Sub-Committee conducted a joint consideration of the items "United Nations Programme on Space Applications and the co-ordination of space activities within the United Nations system" and "Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space".

2. The Sub-Committee noted that the General Assembly, in paragraph 14 of resolution 44/46, had once again emphasized the urgency and importance of implementing fully the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82) as early as possible. The Sub-Committee also took note of paragraph 9 of the same resolution, whereby the General Assembly stated that, in the context of the Sub-Committee's consideration of the item, it was particularly urgent to implement the following recommendations:

"(a) All countries should have the opportunity to use the techniques resulting from medical studies in space;

"(b) Data banks at the national and regional levels should be strengthened and expanded and an international space information service should be established to function as a centre of co-ordination;

"(c) The United Nations should support the creation of adequate training centres at the regional level, linked, whenever possible, to institutions implementing space programmes; necessary funding for the development of such centres should be made available through financial institutions;

"(d) The United Nations should organize a fellowship programme through which selected graduates or post-graduates from developing countries should get in-depth, long-term exposure to space technology or applications; it is also desirable to encourage the availability of opportunities for such exposures on other bilateral and multilateral bases outside the United Nations system."

3. In response to the recommendations of the Working Group of the Whole to evaluate the implementation of the recommendations of UNISPACE 82 contained in its report on its third session held in 1989 (A/AC.105/429, annex II, paras. 4, 5 and 6), endorsed by the General Assembly in paragraph 11 of resolution 44/46, the Sub-Committee had before it a number of reports: a report on international co-operation in the peaceful uses of outer space - programmes of Members States (A/AC.105/448 and Add.1), in response to paragraphs 4 (c) and 5 (a) of the report of the Working Group; a report on international co-operation in the peaceful uses of outer space - programmes of international space organizations (A/AC.105/449), in response to paragraph 4 (d); a report on regional and international education, training and research centres in space science and technology and its applications (A/AC.105/450), in response to paragraph 5 (b); a report on implementation of the recommendations of the UNISPACE 82 conference (A/AC.105/451), in response to paragraph 6; and a report on United Nations activities related to space applications (A/AC.105/454), in response to paragraphs 4 (a),(e),(f),(j),(k) and 5 (c),(d).

4. In accordance with paragraph 10 of General Assembly resolution 44/46, the Sub-Committee reconvened the Working Group of the Whole with a view to improving the execution of activities relating to international co-operation, particularly those included in the United Nations Programme on Space Applications, and to propose concrete steps to increase such co-operation as well as to make it more efficient. The Working Group of the Whole was chaired by Mr. Raimundo González (Chile); it held ... meetings between 27 February and ... March 1990 and adopted its report (A/AC.105/C.1/WG.6/L ...) on ... March 1990.

5. Having considered the report of the Working Group of the Whole, the Sub-Committee decided at its ...th meeting, on ... March 1990, to adopt that report, as contained in annex II, on the understanding that the recommendations contained therein would be carried out in accordance with paragraph 9 of General Assembly resolution 37/90 of 10 December 1982. The Sub-Committee recommended that the Working Group of the Whole should be reconvened the next year to continue its work.

A. United Nations Programme on Space Applications

6. Regarding the expanded United Nations Programme on Space Applications, the Sub-Committee had before it the report of the United Nations Expert on Space Applications (A/AC.105/446). The report was supplemented by the statement by the Expert. The Sub-Committee noted that the Programme on Space Applications for 1989 had been carried out satisfactorily and commended the work accomplished by the Expert in carrying out his work programme as endorsed by the Sub-Committee at its last session.

7. The Sub-Committee noted with appreciation that since its last session, additional contributions had been offered by various Member States and organizations and that they had been acknowledged with appreciation in paragraph 45 of the Expert's report, as well as under appropriate sections of the current report.

8. In this connection, the Sub-Committee continued to express its concern over the meagre financial resources available for carrying out the Programme and appealed to Member States to support the Programme through voluntary contributions. The Sub-Committee felt that the limited resources of the United Nations should be focused on the highest priority activities and noted that the Programme on Space Applications was the priority activity of the Outer Space Affairs Division.

1. 1989-1990

(a) Long-range fellowships for in-depth training

9. The Sub-Committee expressed its appreciation to the Governments of Austria, Brazil, the German Democratic Republic and the USSR as well as to ESA for having offered the training fellowships for the period 1989-1990 that were currently being conducted, as shown in annex II to the Expert's report (A/AC.105/446). The Sub-Committee noted with appreciation that the offers of fellowships had been continued for 1990-1991 by the same Governments and organization as indicated by the Expert in his statement. The Sub-Committee also noted that the Government of the USSR had established six new three-year fellowships for interns and post-graduates from developing countries, as indicated in paragraph 8 of the Expert's report.

10. The Sub-Committee noted that it was important to increase the opportunities for in-depth education in all areas of space science, technology and applications through long-term fellowships.

(b) Technical advisory services

11. The Sub-Committee took note of the technical advisory services provided by the Outer Space Affairs Division in support of regional space applications projects. It noted that, as a follow-up to the United Nations/United Nations Development Programme (UNDP)/FAO/ESA Meeting of Experts on Remote Sensing and Satellite Meteorology Applications to Marine Resources and Coastal Management (A/AC.105/436),

a mission would be undertaken with UNDP funding to develop a regional programme for the Atlantic Coast of Africa region focusing on remote-sensing data acquisition, processing and dissemination to complement the conventional means already in use in each country for oceanographic and marine applications and to expand and enhance training capabilities in remote sensing, particularly in marine sciences.

12. The Sub-Committee noted that technical advisory services were also provided to the Secretariat of the Indian Ocean Marine Affairs Co-operation (IOMAC) Programme for the planning of remote-sensing pilot projects to be carried out with financial support from UNDP in order to study the feasibility of using satellite remote sensing for mapping, monitoring and managing the coastal and marine resources in the region. The Sub-Committee noted the offer of the Government of France to provide assistance to this project in co-operation with the United Nations.

13. The Sub-Committee also noted the assistance provided by the Outer Space Affairs Division to the Ministry of Science and Technology of the Government of Costa Rica in the organization of the "Space Conference of the Americas: Prospects of Co-operation for Development", to be sponsored by the Government of Costa Rica with the support of UNDP and held at San José from 12 to 16 March 1990.

(c) United Nations workshops/training courses/seminars/meetings of experts

14. With regard to the activities of the Programme carried out in 1989, the Sub-Committee expressed its appreciation to: (a) the Government of Spain as well as UNDP, FAO and ESA, for co-sponsoring the United Nations/UNDP/FAO/ESA Meeting of Experts on Remote Sensing and Satellite Meteorology Applications to Marine Resources Coastal Management, hosted by the Instituto Nacional de Técnica Aeroespacial and held at Maspalomas, Canary Islands, from 8 to 12 May 1989 (see A/AC.105/436); (b) to the Government of Australia as well as the Economic and Social Commission for Asia and the Pacific (ESCAP), FAO, WMO and ESA, for co-sponsoring the Fifth United Nations/FAO/WMO/ESA International Training Course on the Use of Remote Sensor Systems in Agrometeorological and Hydrological Applications, hosted by the Office for Space Science Applications of the Commonwealth Scientific and Industrial Research Organization and the Australian Centre for Remote Sensing and held at Canberra from 15 May to 2 June 1989 (see A/AC.105/437); (c) the Government of the United Kingdom, for co-sponsoring the United Nations International Meeting of Experts on the Development of Remote Sensing Skills and Knowledge, hosted by the University of Dundee and held at Dundee from 26 to 30 June 1989 (see A/AC.105/438); (d) the Government of Pakistan as well as IOMAC, for co-sponsoring the United Nations/IOMAC Workshop on Oceanographic/Marine Space Information Systems, hosted by the Pakistan Space and Upper Atmosphere Research Commission and held at Karachi from 2 to 6 July 1989 (see A/AC.105/439); (e) the Government of the USSR, for co-sponsoring the United Nations International Training Course on the Use of Remote Sensing Data in Agricultural Management, hosted by the USSR State Committee for Science and Technology and the Scientific Research Centre "AIUS-Agroresources" and held at Moscow from 25 September to 6 October 1989 (see A/AC.105/440); (f) the Government of the German Democratic Republic, for co-sponsoring the Second United Nations International Training Course on Remote Sensing Applications to Geological Sciences, hosted by the Academy of Sciences and held at Potsdam from 5 to 22 October 1989 (see

A/AC.105/441); and (g) the Government of Italy as well as FAO for co-sponsoring the Fourteenth United Nations/FAO International Training Course on the Applications of Remote Sensing to Land Resources, held at FAO headquarters in Rome from 6 to 24 November 1989 (see A/AC.105/442).

15. The Sub-Committee took note of the status of the 1990 programme of United Nations workshops/training courses/seminars/meetings of experts, which included the following activities, as described in paragraphs 31 (a) to (e) of the Expert's report (A/AC.105/446):

(a) United Nations Workshop on Space Communication for Development: Current and Future Developments, Rural Communications, Search and Rescue Missions and Disaster Relief, to be organized in co-operation with the Government of Cuba for the benefit of Member States in the region of the Economic Commission for Latin America and the Caribbean (ECLAC) and held at Havana from 26 to 30 March 1990;

(b) Fifteenth United Nations/FAO International Training Course on Remote Sensing Applications to Renewable Resources, to be organized in co-operation with the Government of Italy and hosted by FAO in Rome from 7 to 23 May 1990;

(c) First United Nations Training Course on Remote Sensing Education for Educators, to be organized in co-operation with the Government of Sweden for the benefit of Member States in the region of the Economic Commission for Africa (ECA) and hosted by the Swedish Agency for International Technical and Economic Co-operation at Stockholm and Kiruna from 14 May to 15 June 1990;

(d) United Nations Workshop on Basic Space Research for the benefit of developing countries, in September/October 1990;

(e) Second United Nations/ESA Workshop on Microwave Remote Sensing Technology, to be organized in co-operation with the Government of Brazil for the benefit of Member States in the ECLAC region and hosted by the Instituto de Pesquisas Espaciais (INPE) at São José dos Campos from 9 to 14 September 1990.

(d) Promotion of greater co-operation in space science and technology

16. The Sub-Committee noted that during the fortieth IAF Congress held at Málaga, Spain, from 7 to 13 October 1989, the United Nations had co-sponsored a special session on "Space and Flood Management" and supported the participation of three speakers from developing countries. It further noted that the United Nations Programme on Space Applications had co-operated with the American Institute for Aeronautics and Astronautics and the Space Institute of the University of Tennessee in organizing an International Symposium on Space Commercialization: Roles of Developing Countries, held at Nashville, Tennessee, from 5 to 10 March 1989 and supported the participation of three participants from developing countries; and had co-operated with the Sociedad de Especialistas Latinamericanos en Percepción Remota (SELPER) by supporting two participants from developing countries in the Fourth Latin American Symposium on Remote Sensing held at Bariloche, Argentina, from 24 to 28 November 1989.

a mission would be undertaken with UNDP funding to develop a regional programme for the Atlantic Coast of Africa region focusing on remote-sensing data acquisition, processing and dissemination to complement the conventional means already in use in each country for oceanographic and marine applications and to expand and enhance training capabilities in remote sensing, particularly in marine sciences.

12. The Sub-Committee noted that technical advisory services were also provided to the Secretariat of the Indian Ocean Marine Affairs Co-operation (IOMAC) Programme for the planning of remote-sensing pilot projects to be carried out with financial support from UNDP in order to study the feasibility of using satellite remote sensing for mapping, monitoring and managing the coastal and marine resources in the region. The Sub-Committee noted the offer of the Government of France to provide assistance to this project in co-operation with the United Nations.

13. The Sub-Committee also noted the assistance provided by the Outer Space Affairs Division to the Ministry of Science and Technology of the Government of Costa Rica in the organization of the "Space Conference of the Americas: Prospects of Co-operation for Development", to be sponsored by the Government of Costa Rica with the support of UNDP and held at San José from 12 to 16 March 1990.

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14. With regard to the activities of the Programme carried out in 1989, the Sub-Committee expressed its appreciation to: (a) the Government of Spain as well as UNDP, FAO and ESA, for co-sponsoring the United Nations/UNDP/FAO/ESA Meeting of Experts on Remote Sensing and Satellite Meteorology Applications to Marine Resources Coastal Management, hosted by the Instituto Nacional de Técnica Aeroespacial and held at Maspalomas, Canary Islands, from 8 to 12 May 1989 (see A/AC.105/436); (b) to the Government of Australia as well as the Economic and Social Commission for Asia and the Pacific (ESCAP), FAO, WMO and ESA, for co-sponsoring the Fifth United Nations/FAO/WMO/ESA International Training Course on the Use of Remote Sensor Systems in Agrometeorological and Hydrological Applications, hosted by the Office for Space Science Applications of the Commonwealth Scientific and Industrial Research Organization and the Australian Centre for Remote Sensing and held at Canberra from 15 May to 2 June 1989 (see A/AC.105/437); (c) the Government of the United Kingdom, for co-sponsoring the United Nations International Meeting of Experts on the Development of Remote Sensing Skills and Knowledge, hosted by the University of Dundee and held at Dundee from 26 to 30 June 1989 (see A/AC.105/438); (d) the Government of Pakistan as well as IOMAC, for co-sponsoring the United Nations/IOMAC Workshop on Oceanographic/Marine Space Information Systems, hosted by the Pakistan Space and Upper Atmosphere Research Commission and held at Karachi from 2 to 6 July 1989 (see A/AC.105/439); (e) the Government of the USSR, for co-sponsoring the United Nations International Training Course on the Use of Remote Sensing Data in Agricultural Management, hosted by the USSR State Committee for Science and Technology and the Scientific Research Centre "AIUS-Agroresources" and held at Moscow from 25 September to 6 October 1989 (see A/AC.105/440); (f) the Government of the German Democratic Republic, for co-sponsoring the Second United Nations International Training Course on Remote Sensing Applications to Geological Sciences, hosted by the Academy of Sciences and held at Potsdam from 5 to 22 October 1989 (see

A/AC.105/441); and (g) the Government of Italy as well as FAO for co-sponsoring the Fourteenth United Nations/FAO International Training Course on the Applications of Remote Sensing to Land Resources, held at FAO headquarters in Rome from 6 to 24 November 1989 (see A/AC.105/442).

15. The Sub-Committee took note of the status of the 1990 programme of United Nations workshops/training courses/seminars/meetings of experts, which included the following activities, as described in paragraphs 31 (a) to (e) of the Expert's report (A/AC.105/446):

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(b) Fifteenth United Nations/FAO International Training Course on Remote Sensing Applications to Renewable Resources, to be organized in co-operation with the Government of Italy and hosted by FAO in Rome from 7 to 23 May 1990;

(c) First United Nations Training Course on Remote Sensing Education for Educators, to be organized in co-operation with the Government of Sweden for the benefit of Member States in the region of the Economic Commission for Africa (ECA) and hosted by the Swedish Agency for International Technical and Economic Co-operation at Stockholm and Kiruna from 14 May to 15 June 1990;

(d) United Nations Workshop on Basic Space Research for the benefit of developing countries, in September/October 1990;

(e) Second United Nations/ESA Workshop on Microwave Remote Sensing Technology, to be organized in co-operation with the Government of Brazil for the benefit of Member States in the ECLAC region and hosted by the Instituto de Pesquisas Espaciais (INPE) at Sao José dos Campos from 9 to 14 September 1990.

(d) Promotion of greater co-operation in space science and technology

16. The Sub-Committee noted that during the fortieth IAF Congress held at Málaga, Spain, from 7 to 13 October 1989, the United Nations had co-sponsored a special session on "Space and Flood Management" and supported the participation of three speakers from developing countries. It further noted that the United Nations Programme on Space Applications had co-operated with the American Institute for Aeronautics and Astronautics and the Space Institute of the University of Tennessee in organizing an International Symposium on Space Commercialization: Roles of Developing Countries, held at Nashville, Tennessee, from 5 to 10 March 1989 and supported the participation of three participants from developing countries; and had co-operated with the Sociedad de Especialistas Latinamericanos en Percepción Remota (SELPER) by supporting two participants from developing countries in the Fourth Latin American Symposium on Remote Sensing held at Bariloche, Argentina, from 24 to 28 November 1989.

17. The Sub-Committee also noted that the Programme plans to co-operate with COSPAR, IAF, the International Society for Photogrammetry and Remote Sensing (ISPRS) and SELPER in the organization of space-related meetings in 1990, 1991 and 1992 in order to promote greater co-operation between developing and developed countries and between developing countries. In particular, it noted that the Programme would be supporting the participation of specialists from developing countries in those meetings.

2. 1991

(a) United Nations workshops/training courses/seminars/meetings of experts

18. The Sub-Committee recommended the approval of the programme of workshops/training courses/seminars/meetings of experts proposed for 1991, as outlined by the Expert in paragraph 32 of his report (A/AC.105/446), including the following:

(a) A United Nations workshop to be organized in co-operation with the ESCAP Regional Remote Sensing Programme and the Government of China on space technology applications to minimize and alleviate the impact of natural disasters, such as forest fires, floods, storms, high winds and earthquakes, to be held at Beijing in September 1991;

(b) The Sixteenth United Nations/FAO International Training Course on Remote Sensing Technology Applications, organized in co-operation with the Government of Italy;

(c) The Sixth United Nations/FAO/WMO/ESA Training Course on Remote Sensing Technology for Development, for the benefit of Member States in the ECLAC region;

(d) The Third United Nations Training Course on Communications Technology for Development, to be organized in co-operation with the Government of the USSR;

(e) The Third United Nations/ESA Workshop on Microwave Remote Sensing Technology, for the benefit of Member States in the ECA region;

(f) The Third United Nations Training Course on Remote Sensing Applications to Geological Sciences, to be organized in co-operation with the Government of the German Democratic Republic.

B. International space information service

19. The Sub-Committee noted with satisfaction that the Outer Space Affairs Division was in the process of developing a space information system including both information within the United Nations system and access to existing external data bases. Initial development work included information on space objects, space terminology and acronyms, and specialists in space technology and applications.

20. The Sub-Committee noted with satisfaction the publication of the document entitled "Seminars of the United Nations Programme on Space Applications: selected papers on remote sensing technology" (A/AC.105/443); the updated edition of the Directory on Education, Training, Research and Fellowship Opportunities in Space Science and Technology and its Applications (A/AC.105/432); and the addendum to the Directory of Information Systems on Space Science and Technology (A/AC.105/397/Rev.1/Add.1). The Sub-Committee also noted the preparation of a list of experts in space technology and applications, as recommended by the Working Group of the Whole, and the plans to issue an integrated and updated Directory of Information Systems on Space Science and Technology.

C. Reports

21. The Sub-Committee noted with appreciation the reports submitted to it in response to the recommendations of the Working Group of the Whole in its report on its third session (A/AC.105/429, annex II, paras. 4, 5 and 6).

D. Co-ordination of space activities within the United Nations system and inter-agency co-operation

22. The Sub-Committee noted that the General Assembly, at its forty-fourth session, had reaffirmed its request that all organs, organizations and bodies of the United Nations system and other intergovernmental organizations working in the field of outer space or on space-related matters should co-operate in the implementation of the recommendations of UNISPACE 82.

23. The Sub-Committee noted with satisfaction that the eleventh Inter-Agency Meeting on Outer Space Activities had been convened by the Administrative Committee on Co-ordination (ACC) at Geneva and hosted by ITU from 27 to 29 September 1989, and that its report (ACC/1989/PG/8) was before the Sub-Committee. The Sub-Committee noted the information provided on the progress achieved in the co-ordination of space activities among organizations within the United Nations system and expressed its appreciation for the report of the Secretary-General entitled "Co-ordination of outer space activities within the United Nations system: programmes of work for 1990 and 1991 and future years" (A/AC.105/444).

24. The Sub-Committee was informed of a proposal to organize two workshops jointly by the Outer Space Affairs Division and the Centre for Science and Technology for Development, as the input to a publication on space technology and applications in the series of Advance Technology Alert Bulletins. It noted that the organization of the proposed workshops would be subject to the concurrence of concerned Governments and organizations as well as the availability of funds to be provided by the Centre. The Sub-Committee also noted the reservations expressed by some delegations concerning the organizations of the workshops. In this connection, the Sub-Committee pointed out the role of the Committee on the Peaceful Uses of Outer Space and its subsidiary bodies as the focal point for the co-ordination of space-related activities in the United Nations.

25. The Sub-Committee continued to stress the necessity of ensuring continuous and effective consultations and co-ordination in the field of outer space activities among organizations within the United Nations system and the avoidance of duplication of activities.

E. Regional and interregional mechanisms of co-operation

26. The Sub-Committee noted that the General Assembly, in its resolution 44/46, had reaffirmed its approval of the recommendation of UNISPACE 82 regarding the establishment and strengthening of regional mechanisms of co-operation and their promotion and creation through the United Nations system. The Sub-Committee noted with satisfaction that, in carrying out various activities in the implementation of recommendations of UNISPACE 82, the Secretariat had sought to strengthen those mechanisms.

27. The Sub-Committee took particular note of the proposal for regional centres for education in space science and technology, based on existing national or regional educational institutions in developing countries, as outlined in paragraphs 33 to 37 of the report of the Expert (A/AC.105/446). The Sub-Committee urged Member States to consider providing voluntary contributions to support that effort.

28. The Sub-Committee noted the contributions made by other international organizations towards the promotion of international co-operation in outer space. In particular, it noted the work of ITU and its subsidiary bodies in the international co-ordination of radio communications, including satellite communications, in particular the planning of the 1992 World Administrative Radio Conference, which is of particular relevance to space matters, and the efforts of ITU in providing technical assistance to developing countries, including assistance towards the development of a regional communication satellite system for Africa (RASCOM). The Sub-Committee also noted that INTELSAT was further developing its system for international satellite communications and that it was expanding its programme for training and education in the use of communication satellites for the benefit of developing countries, as part of the INTELSAT Assistance and Development Programme. The Sub-Committee also noted that ESA was continuing its programme of international co-operative space activities, including training programmes for the benefit of developing countries, support of the activities of the United Nations Programme on Space Applications and technical assistance projects organized in co-operation with the Asian Development Bank and the African Development Bank. The Sub-Committee also noted that INTERSPUTNIK was continuing to develop its communication satellite system and was expanding its programme of assistance to developing countries, through dissemination of information and assistance in Earth station development.

29. The Sub-Committee emphasized the importance of regional and international co-operation in making the benefits of space technology available to all countries, through such co-operative activities as shared payloads, dissemination of information on spin-off benefits, ensuring compatibility of space systems and providing access to launch capabilities at reasonable cost.



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COMMITTEE ON THE PEACEFUL USES
OF OUTER SPACE
Scientific and Technical Sub-Committee

DRAFT REPORT OF THE SCIENTIFIC AND TECHNICAL SUB-COMMITTEE
ON THE WORK OF ITS TWENTY-SEVENTH SESSION

Addendum

III. MATTERS RELATING TO REMOTE SENSING OF THE EARTH BY
SATELLITES, INCLUDING, INTER ALIA, APPLICATIONS
FOR DEVELOPING COUNTRIES

1. In accordance with General Assembly resolution 44/46, the Sub-Committee continued its consideration of this item.
2. In the course of the debate, delegations reviewed the national and co-operative programmes in remote sensing. Examples were given of national programmes in developing and developed countries and of international programmes based on bilateral, regional and international co-operation, including programmes of technical co-operation between developing countries. Countries with advanced capabilities in the field, including some developing countries, described programmes to provide assistance to other developing countries.
3. The Sub-Committee noted the continuing programmes of China, France, India, Japan, the USSR and the United States for remote-sensing satellites as well as the planned remote-sensing satellite systems of Brazil, Canada and ESA. It also took note of the remote-sensing activities of FAO for mapping, assessment and management of the renewable natural resources for the benefit of developing countries. In this connection, the Sub-Committee noted that special presentations had been given on remote sensing, as mentioned in paragraph ... of the present report.
4. The Sub-Committee reiterated its view that remote sensing from outer space should be carried out, taking into account the need to provide appropriate and non-discriminatory assistance to meet the needs of the developing countries.

5. The Sub-Committee emphasized the importance of making remote-sensing data and analysed information available to all countries at reasonable cost and in a timely manner. The Sub-Committee also recognized the need for continuing free access to data from operational meteorological satellites.

6. The Sub-Committee felt that international co-operation in the use of remote-sensing satellites should be encouraged, both through co-ordination of the operations of ground stations and through regular meetings between satellite operators and users. It noted the importance of compatibility of data formats between different satellite systems. The Sub-Committee also noted the importance of the sharing of experiences and technologies between developing countries, through international and regional remote-sensing centres, and through joint work on collaborative projects.

7. The Sub-Committee noted the importance of satellite remote sensing for monitoring and protecting the Earth's environment, and in particular for studying and monitoring global climate change.

8. The Sub-Committee recommended that the item be retained on its agenda as a priority item for the next session and that sufficient time be allocated for its consideration.

IV. USE OF NUCLEAR POWER SOURCES IN OUTER SPACE

9. In accordance with General Assembly resolution 44/46, the Sub-Committee continued its consideration of this item and welcomed the additional amount of time allocated to its consideration.

10. In accordance with General Assembly resolution 44/46, the Working Group on the Use of Nuclear Power Sources in Outer Space was reconvened to resume its work at the current session. The Working Group met from 6 to 8 March 1990 under the chairmanship of Professor J. H. Carver (Australia). At a meeting held on 8 March 1990, the Working Group adopted its report (A/AC.105/C.1/L....).

11. At its th meeting, on 9 March 1990, the Sub-Committee adopted the report of the Working Group, which is contained in annex III to the present report.

12. The Sub-Committee recommended that the item be retained on its agenda as a priority item for the next session and further recommended that the Working Group continue its work at that session, and that sufficient time be allocated in a flexible manner according to the needs of the Working Group. The Sub-Committee called upon Member States to submit their working papers for the Working Group well in advance of its next session.

V. QUESTIONS RELATING TO SPACE TRANSPORTATION SYSTEMS AND THEIR IMPLICATIONS FOR FUTURE ACTIVITIES IN SPACE

13. In accordance with General Assembly resolution 44/46, the Sub-Committee continued its consideration of this item.

14. In the course of the discussion, delegations reviewed the national and co-operative programmes in space transportation systems. In particular, the Sub-Committee noted that:

(a) In 1989, Brazil had continued its sounding rocket activities and inaugurated the Launching Centre of Alcântara as part of a programme to develop a capability for complete space missions;

(b) China had launched an operational communications satellite into geostationary orbit and continued preparations for forthcoming launches of a commercial communications satellite, a meteorological satellite and a recoverable microgravity research satellite. It had also continued developmental work on new models of the Long March series of launchers;

(c) Iraq had conducted a successful test launch of its Al Abid rocket from the Al Anbar Space Centre;

(d) Japan had successfully launched a number of spacecraft during 1989, including the MUSES-A lunar probe to test technologies for use in further lunar and planetary exploration missions. The EXOS-D (Akebono) satellite had been launched to study auroral phenomena at altitudes from 300 to 8,000 km. In the field of space applications, Japan had launched its fourth Geostationary Meteorological Satellite (GMS-4) and the second Marine Observation Satellite (MOS-1B), ensuring continuity of observations in those two programmes. As part of its development work on the H-II launch vehicle, Japan had conducted a test launch of the TR-1 rocket, a scale model of the H-II;

(e) In 1989, the USSR had continued its very active programme of space flights. The year had seen the end of one long-duration flight aboard the Mir space station by three cosmonauts, the beginning of a new mission by two other cosmonauts and the expansion of the station through the addition of a new module, Quant 2. Throughout the year, astrophysical, geophysical, technological, biological and medical experiments had been conducted aboard the station. Training for future missions had begun for cosmonauts from Austria, Japan and the United Kingdom. In the field of space-based astronomy, the Granat observatory had been launched and had begun making X-ray and gamma-ray observations. As part of the international co-operative Aktivny programme, the Intercosmos 24 satellite had been launched along with the Magion 2 sub-satellite for studying the Earth's magnetosphere. A biological satellite Cosmos-2044, in another co-operative effort, had carried experiments prepared in several countries. Further efforts had been made towards making Soviet launch vehicles available for use by other countries on a commercial basis;

(f) The United States had continued work on the development of the International Space Station Freedom, in co-operation with Canada, Japan and ESA. Five Space Shuttle flights had taken place in 1989, and development had continued on advanced booster rockets and on an extended-duration capability. The United States programme of planetary exploration had continued with the launch of the Magellan spacecraft to Venus and the Galileo spacecraft to Jupiter. The Voyager 2 spacecraft had produced important information during its fly-by of Neptune before continuing on into interstellar space. The Cosmic Background Explorer had been launched and had begun a programme of observations of radiation remaining from the early history of the universe. Work had advanced towards the launching in 1990 of the Hubble Space Telescope, a facility which would greatly extend the ability to observe the most distant objects in the universe. The United States had also continued its Landsat remote-sensing satellite programme and its programme of operational meteorological satellites. Almost all of these programmes had been undertaken with the co-operation of international partners;

(g) ESA had continued its programme of Ariane launches, placing into orbit its own satellites, national satellites of its member States and satellites for other countries and organizations. In addition to ESA's Olympus high-power communications satellite, Ariane launched telecommunications satellites for Scandinavia (Tele-X), the Federal Republic of Germany (Kopernikus and TV-SAT), Japan (JCSAT-1 and Superbird A), the United Kingdom (Marco Polo-1) and INTELSAT (Intelsat VA and VI). Ariane had also launched the Spot-2 remote-sensing satellite for France and the first operational Meteosat for Eumetsat, ensuring continuing data from those systems. In the field of space research, ESA had launched the Hipparcos satellite to make precise measurements of the positions of stars. ESA also had continued developmental work on the heavy launcher Ariane V, the space plane Hermes and the Columbus system, which included various elements provided by ESA as part of the international space station programme.

15. The Sub-Committee also noted the special presentation by a United States astronaut on the Space Shuttle mission that had launched the Magellan spacecraft to Venus, as mentioned in paragraph ... of the present report.

16. The Sub-Committee noted the developments in various programmes related to space transportation and stressed the importance of international co-operation in this field in providing all countries with access to the benefits of space science and technology.

17. The Sub-Committee recommended that the item be retained on its agenda for the next session.

VI. EXAMINATION OF THE PHYSICAL NATURE AND TECHNICAL ATTRIBUTES OF THE GEOSTATIONARY ORBIT; EXAMINATION OF ITS UTILIZATION AND APPLICATIONS, INCLUDING, INTER ALIA, IN THE FIELD OF SPACE COMMUNICATIONS, AS WELL AS OTHER QUESTIONS RELATING TO SPACE COMMUNICATIONS DEVELOPMENTS, TAKING PARTICULAR ACCOUNT OF THE NEEDS AND INTERESTS OF DEVELOPING COUNTRIES

18. In accordance with General Assembly resolution 44/46, the Sub-Committee continued consideration of this item.

19. In the course of the consideration of the item, some delegations expressed the view that it was important to continue the consideration of the question of the geostationary orbit taking into account its characteristics as a limited natural resource which required a special régime that guaranteed equitable access by all States, in particular by equatorial States. Other delegations expressed the view that this special régime which included equitable access should take into account primarily the needs of developing countries.

20. Some delegations noted that questions relating to the geostationary orbit were already being addressed effectively in ITU. They also reviewed recent developments in national and international space communications programmes, including technical developments that would contribute to ensuring that all countries would have access to satellite communications.

21. The Sub-Committee took note of the various current and planned satellite communications programmes of Member States and of international organizations such as INTELSAT and INTERSPUTNIK.

22. The Sub-Committee recommended that its consideration of the item be continued at its next session.

VII. MATTERS RELATING TO LIFE SCIENCES, INCLUDING SPACE MEDICINE

23. In accordance with General Assembly resolution 44/46, the Sub-Committee continued its consideration of this item. The Sub-Committee heard special presentations on the question by experts from the USSR and the United States, as mentioned in paragraph ... of the present report.

24. The Sub-Committee noted that studies of human physiology under conditions of manned space flight had led to important advances in medical knowledge in such areas as blood circulation, heart function and metabolism. It noted that products of space biotechnology, such as pharmaceuticals, could have a profound impact on health care on Earth and that telemedicine techniques developed for the treatment of astronauts during space flight were also applicable for improving health care in remote areas. The Sub-Committee took particular note of the successful Telemedicine Spacebridge, which had connected medical centres in the United States with Armenia and the town of Ufa in the USSR, following a severe earthquake in Armenia and a train accident in Ufa. The Telemedicine Spacebridge, conducted under the United States/USSR Joint Working Group on Space Biology and Medicine, had

provided medical consultations for 210 patients, with others benefiting from the information transmitted.

25. The Sub-Committee noted that space studies in life sciences and medicine had important potential benefits for all countries and that efforts should be made to promote international co-operation to enable all countries to benefit from those advances.

26. The Sub-Committee recommended that its consideration of the item be continued at its next session.

VIII. PROGRESS IN THE GEOSPHERE-BIOSPHERE (GLOBAL CHANGE) PROGRAMME

27. In accordance with General Assembly resolution 44/46, the Sub-Committee continued its consideration of this item.

28. The Sub-Committee noted with satisfaction that following its recommendation and that of the Committee, which had been endorsed by the General Assembly, COSPAR, at the invitation of the Sub-Committee, had made a special presentation to the Sub-Committee on progress in the international geosphere-biosphere (global change) programme, as mentioned in paragraph ... of the present report. The Sub-Committee expressed its appreciation to COSPAR for its very informative presentation.

29. The Sub-Committee noted the progress being made through international co-operation in the planning of the international geosphere-biosphere (global change) programme for the 1990s. It noted that such a joint international effort was of fundamental importance for examining the future habitability of the planet and for managing the common natural resources of the Earth. The Sub-Committee took particular note of the need to involve as many nations as possible in the scientific activities of the programme, both in developed and in developing countries. It agreed that it should remain informed of progress in the programme so as to be able to facilitate international co-operation in that area.

30. In this connection, the Sub-Committee noted the proposal for an international environmental-monitoring space laboratory, possibly on the basis of the Almaz orbital stations, as described in document A/AC.105/C.1/L.165. The Sub-Committee also noted the capabilities of the planned Earth Observing System (EOS) for making comprehensive observations of the global environment. The Sub-Committee also noted the proposal for the Protection of the Environment for Assuring a Cleaner Earth (PEACE) satellite system. The Sub-Committee recommended that States consider participating in such co-operative activities.

31. The Sub-Committee recommended that its consideration of the item be continued at its next session.

IX. MATTERS RELATING TO PLANETARY EXPLORATION

32. In accordance with General Assembly resolution 44/46, the Sub-Committee continued its consideration of this item. The Sub-Committee heard a special presentation on the question by an expert from the United States, as mentioned in paragraph ... of the present report.

33. The Sub-Committee noted that in 1989, more than 12 years after its launch, the Voyager-2 spacecraft had flown by Neptune, thus completing its detailed observations of the four largest planets of the solar system. The Sub-Committee also noted that observations of Mars and its moon Phobos had been made by the Phobos-2 spacecraft, that the Magellan spacecraft had been launched towards Venus, where it would conduct a radar mapping programme, and that the Galileo spacecraft had been launched on a complex trajectory to Jupiter, where it would make detailed observations of that planet. The Sub-Committee also took note of the plans for future spacecraft to conduct comprehensive investigations of Mars, to observe the polar regions of the Sun and to investigate the Saturn system. It noted in particular the high degree of international co-operation in all of those investigations.

34. The Sub-Committee recommended that its consideration of the item be continued at its next session.

X. MATTERS RELATING TO ASTRONOMY

35. In accordance with General Assembly resolution 44/46, the Sub-Committee continued its consideration of this item. The Sub-Committee heard a special presentation on the question by an expert from the United States, as mentioned in paragraph ... of the present report.

36. The Sub-Committee noted that the use of spacecraft for making astronomical observations from above the atmosphere had greatly advanced knowledge of the universe by allowing observations in all regions of the electromagnetic spectrum. It noted that with the launchings of Hipparcos, the Cosmic Background Explorer (COBE) and the Granat spacecraft astronomers had powerful new tools for their investigations of the universe. The forthcoming launches of the Hubble Space Telescope, the Gamma Ray Observatory, Rosat and the Gamma-1 observatory would open up further realms of the universe to detailed observation. The Sub-Committee noted with satisfaction that all of those projects were open to broad international co-operation.

37. The Sub-Committee recommended that its consideration of the item be continued at its next session.

XI. THEME FIXED FOR SPECIAL ATTENTION AT THE 1990 SESSION:
"THE USE OF SPACE TECHNOLOGY IN TERRESTRIAL SEARCH
AND RESCUE AND IN DISASTER RELIEF ACTIVITIES"

38. In accordance with General Assembly resolution 44/46, the Sub-Committee paid special attention to the theme "The use of space technology in terrestrial search and rescue and in disaster relief activities". The Sub-Committee noted with satisfaction that, following its recommendation and that of the Committee and in accordance with resolution 44/46, COSPAR and IAF had, at the invitation of the Sub-Committee, conducted a symposium on the theme on 27 and 28 February 1990. The Sub-Committee expressed appreciation to COSPAR and IAF for the very instructive symposium.

39. The Sub-Committee noted with satisfaction the highly successful international project for satellite-aided search and rescue known as COSPAS-SARSAT. In this connection, the Sub-Committee recommended that all Member States and relevant international organizations consider utilizing to the maximum extent possible the COSPAS-SARSAT system for global search and rescue activities.

40. The Sub-Committee noted that the General Assembly had designated the 1990s as the International Decade for Natural Disaster Reduction and that the Office of the United Nations Disaster Relief Co-ordinator (UNDRO) had been designated as the focal point for activities aimed at reducing the devastating effects of catastrophic natural disasters.

41. The Sub-Committee noted the important role that space technology could play in reducing the effects of such disasters as severe storms, floods, landslides, droughts, locust swarms, volcanic eruptions, earthquakes and disasters at sea. It also noted the role of international organizations and agencies such as the International Maritime Organization (IMO), the International Civil Aviation Organization (ICAO), WMO and INMARSAT in this field.



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COMMITTEE ON THE PEACEFUL USES OF
OUTER SPACE
Scientific and Technical Sub-Committee

DRAFT REPORT OF THE SCIENTIFIC AND TECHNICAL SUB-COMMITTEE
ON THE WORK OF ITS TWENTY-SEVENTH SESSION

Addendum

XII. OTHER MATTERS

A. International Space Year (ISY) - 1992

1. The Sub-Committee noted that the General Assembly, in its resolution 44/46, paragraph 20, had endorsed the initiative of international scientific organizations and bodies to designate 1992 as International Space Year. It also noted that the General Assembly, in paragraph 21 of the same resolution, had endorsed the recommendation of the Committee on the Peaceful Uses of Outer Space that international co-operation should be promoted through the International Space Year, which should be carried out for the benefit and in the interests of all States, taking into particular account the needs of developing countries, and that, in that context, the training and educational capabilities of the United Nations Programme on Space Applications should be utilized to bring about a meaningful role for the United Nations, through voluntary contributions and without any impact on the regular budget of the United Nations or the existing programme of work of the Programme.

2. The Sub-Committee had before it a proposed programme for the participation of the United Nations in International Space Year (ISY), to be celebrated in 1992, the tenth anniversary of UNISPACE 82 (A/AC.105/445 and Add.1 and 2). The Sub-Committee urged other Member States and international organizations to consider supporting additional scientific and technical activities in co-operation with the United Nations as part of International Space Year. The Sub-Committee noted that it was particularly important to increase voluntary contributions for ISY activities to be carried out through the United Nations Programme on Space Applications, since the Programme was dependent on voluntary contributions for most of its activities.

3. The Sub-Committee considered that the activities to be undertaken by the United Nations as part of International Space Year should be complementary to the activities of international organizations such as COSPAR, IAF and the Space Agency Forum for International Space Year.

4. The Sub-Committee noted the primary focus of proposed International Space Year activities on the use of space technology for studying and monitoring the environment. It noted that the United Nations Conference on Environment and Development was also being planned for 1992 and recommended that consideration be given to ways to ensuring that the two activities are complementary.

5. The Sub-Committee noted the various national and international programmes being proposed as part of International Space Year. It noted the importance of including all countries in these programmes and of planning activities that would continue beyond 1992.

6. The Sub-Committee requested the Secretariat to keep the Committee and the Sub-Committee informed of further developments relating to this question.

B. Space and Earth environment

7. The Sub-Committee also noted that the General Assembly, in paragraph 22 of resolution 44/46, had recommended that more attention be paid to all aspects related to the protection and preservation of the outer space environment, especially those potentially affecting the Earth's environment.

8. The Sub-Committee noted further that the General Assembly, in resolution 44/46, paragraph 23, had considered that it was essential that Member States pay more attention to the problem of collisions with space debris, and other aspects of space debris, and called for the continuation of national research on that question. The Sub-Committee took note of the studies relating to space debris that had been carried out by Member States and submitted to the Sub-Committee.

9. Some delegations expressed the view that increased knowledge regarding the space environment was necessary to control the amount of space debris, and that compilation of and access to data on space debris and the tracking and monitoring of the space debris environment could not be done effectively without international co-operation.

10. Some delegations expressed the view that the time had come for the Committee to start considering possible measures that the international community could take on the question of space debris and pollution in outer space. Other delegations, while recognizing the importance of the subject, expressed the view that such consideration was premature until further national research on the problem of space debris had been completed.

C. Other reports

11. The Sub-Committee welcomed the report of WMO on its Tropical Cyclone Programme for 1988/89 (A/AC.105/447); the annual report of ESA for 1988 (A/AC.105/435); the annual report of INTELSAT for 1988/89 (A/AC.105/455); as well as the advance copy of the twenty-ninth report of ITU on telecommunication and the peaceful uses of outer space, a final version of which will be submitted to the thirty-third session of the Committee, to be held in June 1990. The Sub-Committee requested ITU, WMO, ESA and INTELSAT to continue to report on their work.

12. The Sub-Committee expressed its appreciation to COSPAR for its report on the progress of space research during the period 1988-1989 (A/AC.105/452) and to IAF for its report on highlights of space technology during 1989 (A/AC.105/453).

13. The Sub-Committee noted with appreciation the participation in its session of representatives from United Nations bodies, specialized agencies and permanent observers, and found the reports/statements they had made helpful in enabling the Sub-Committee to fulfil its role as focal point for international co-operation.

D. Review of the future role and work of the Scientific and Technical Sub-Committee

14. The Sub-Committee recommended that the agenda of its twenty-eighth session include the following priority items:

(a) Consideration of the United Nations Programme on Space Applications and the co-ordination of space activities within the United Nations system;

(b) Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82);

(c) Matters relating to remote sensing of the Earth by satellites including, inter alia, applications for developing countries;

(d) The use of nuclear power sources in outer space.

15. The Sub-Committee also recommended that the agenda of the twenty-eighth session include the following items:

(a) Questions relating to space transportation systems and their implications for future activities in space;

(b) Examination of the physical nature and technical attributes of the geostationary orbit; examination of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to space communications developments, taking particular account of the needs and interests of developing countries;

(c) Matters relating to life sciences, including space medicine;

(d) Progress in national and international space activities related to Earth environment, in particular progress in the geosphere-biosphere (global change) programme;

(e) Matters relating to planetary exploration;

(f) Matters relating to astronomy;

(g) The theme fixed for special attention at the 1991 session of the Scientific and Technical Sub-Committee: "Applications of airborne and satellite remote sensing for prospecting mineral and ground-water resources and for monitoring and managing biological resources, with emphasis on agriculture, into particular account the needs of developing countries".

16. The Sub-Committee recommended that, regarding agenda item (d) in paragraph 15 above, COSPAR and IAF should be invited to present reports and arrange a special presentation on progress in the geosphere-biosphere (global change) programme. The Sub-Committee further recommended that, regarding agenda item (g) in paragraph 15 above, COSPAR and IAF should be invited to arrange a symposium with as wide participation as possible, to be held during the first week of the Sub-Committee session, to complement discussions within the Sub-Committee on the theme "Applications of airborne and satellite remote sensing for monitoring, prospecting and managing mineral and biological resources, with emphasis on agriculture, into particular account the needs of developing countries".

17. The Sub-Committee recommended that the title of agenda item (d) in paragraph 15 above, previously entitled "Progress in the geosphere-biosphere (global change) programme" should be changed to "Progress in national and international space activities related to the Earth environment, in particular progress in the geosphere-biosphere (global change) programme".

18. The Sub-Committee, noting the significant progress that had been achieved in its consideration of the item on the use of NPS in outer space, recommended that the Committee, at its next session, should consider the future work of the Sub-Committee.

19. Some delegations, while recognizing the significance of the scientific and technical presentations to the Sub-Committee, expressed the view that the presentations should not interfere with the substantive work of the Sub-Committee which should have priority over such presentations.

20. The Sub-Committee took note of the statement of the Chairman of the Group of 77 that Mr. Raimundo Gonzales (Chile), the Chairman of the Working Group of the Whole to evaluate the implementation of the recommendations of UNISPACE 82, had been nominated as chairman of the Legal Sub-Committee's Working Group on the agenda item, and that the Group of 77 would nominate Mr. Mohammed Nasim Shal (Pakistan) as new Chairman of the Working Group of the Whole. The Sub-Committee expressed its appreciation to Mr. Gonzalez for his work as Chairman of the Working Group.

XIII. TRIBUTE

21. The Sub-Committee paid tribute to Prof. John H. Carver upon his completion of 20 years as Chairman of the Scientific and Technical Sub-Committee.



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COMMITTEE ON THE PEACEFUL USES OF
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Scientific and Technical Sub-Committee
Twenty-seventh session

REPORT OF THE WORKING GROUP OF THE WHOLE TO EVALUATE
THE IMPLEMENTATION OF THE RECOMMENDATIONS OF THE
SECOND UNITED NATIONS CONFERENCE ON THE EXPLORATION
AND PEACEFUL USES OF OUTER SPACE ON THE WORK OF ITS
FOURTH SESSION

1. [See A/AC.105/C.1/WG.6/L.4, para. 1]

2. [See A/AC.105/C.1/WG.6/L.4, para. 2]

3. In considering the item, the Working Group had before it the studies and reports prepared by the Secretariat and international organizations as requested by the Group at its third session and endorsed by the General Assembly in paragraph 11 of resolution 44/46. The Working Group also had before it a proposal of the Group of 77, contained in document A/AC.105/C.1/WG.6/L.4.

4. [See A/AC.105/C.1/WG.6/L.4, para. 4 (chapeau)]

(a) The emphasis of the United Nations Programme on Space Applications should remain on long-term, project-oriented on-the-job training in space technology itself as well as its specific application areas, in particular, new developments in satellite systems, software for remote sensing and use of digital processing systems and training for management of ground stations. The Working Group noted with appreciation the offers made by some Member States and international organizations in that regard and urged other Member States and international organizations to make similar contributions so that the number of fellowships offered in 1990 and subsequent years could be increased. The Outer Space Affairs Division of the United Nations Secretariat should make every effort to arrange for the increase in the number of fellowships offered and to encourage full utilization of the fellowships. In order to facilitate the development by the developing countries of their indigenous research and development capabilities, the number of trainees from each country should be sufficient to create a national core group of experts;

(b) [See A/AC.105/C.1/WG.6/L.4, para. 4 (b)]

(c) In the light of the continued development and evolution of space activities, the Committee should request all States, particularly those with major space or space-related capabilities, to inform the Secretary-General annually, as appropriate, about those space activities that were or could be the subject of greater international co-operation, with particular emphasis on the needs of the developing countries, in order to permit a better assessment of the present and future of such international co-operation by the Working Group at its next session;

(d) [See A/AC.105/C.1/WG.6/L.4, para. 4 (d)]

(e) In order to promote better access to and experience in higher education in space-related subjects, the United Nations should, upon request, arrange for the provision of consultancy in the form of experts from the developed and developing countries for the preparation of an integrated national plan of action for initiating, strengthening or reorienting an appropriate space applications programme that should be in conformity with other national development programmes. Based on such specific requests, the Outer Space Affairs Division should compile a list of experts in space technology and applications, in consultation with Member States and their national space authorities, to facilitate the exchange of consultants at the international level. The list should be updated periodically and circulated among Member States for their information;

(f) [See A/AC.105/C.1/WG.6/L.4, para. 4 (f)]

(g) [See A/AC.105/C.1/WG.6/L.4, para. 4 (g)]

(h) [See A/AC.105/C.1/WG.6/L.4, para. 4 (h)]

(i) [See A/AC.105/C.1/WG.6/L.4, para. 4 (i)]

(j) On the basis of the information provided by States, the Outer Space Affairs Division should prepare on a regular basis an updated report on the resources and technological capabilities of States in the fields of space activities for the promotion of co-operation in the peaceful uses of outer space. Similarly, the Division should prepare on a regular basis an updated report on the capabilities of States in the areas of education, training, research and fellowship opportunities, for the promotion of co-operation in the peaceful uses of outer space;

(k) [See A/AC.105/C.1/WG.6/L.4, para. 4 (k)]

(l) [See A/AC.105/C.1/WG.6/L.4, para. 4 (l)]

(m) The Working Group requested the Outer Space Affairs Division to prepare a report on the economic aspects of the implementation of the recommendation contained in paragraph 9 (b) of General Assembly resolution 44/46, on the basis of information provided by Member States and the reports of the United Nations

meetings that have been held on that subject, so that at its next session the Working Group could examine in detail the most cost-effective and efficient ways of implementing that recommendation;

(n) [See A/AC.105/C.1/WG.6/L.4, para. 4 (n)]

5. [See A/AC.105/C.1/WG.6/L.4, para. 5 (chapeau)]

(a) In the case of priority studies recommended by UNISPACE 82, information from different reports should be integrated and new information should be compiled in order to provide Member States with comprehensive studies;

(b) Based upon the results obtained in implementation of subparagraph (a) above, a few specific studies should be carried out to demonstrate the potentials of space technology, which might include the following:

- (i) Integrated land and water resources management for rural development;
- (ii) Remote and rural area communications and broadcasting;
- (iii) Forest resources management;
- (iv) Flood monitoring and control;
- (v) Desertification;
- (vi) Ocean resources development;
- (vii) Upper atmosphere studies for weather and environment monitoring.

As a first step, information on some of those subjects might be provided as part of the United Nations efforts in conjunction with International Space Year.

6. In order to permit a better assessment of the implementation of the recommendations of UNISPACE 82, the Working Group recommended that, as a first step, the following reports be prepared:

(a) [See A/AC.105/C.1/WG.6/L.4, para. 6 (a)]

(b) A report dealing with the implementation of the priority recommendations of UNISPACE 82 addressed to Member States, as identified in paragraph 9 of General Assembly resolution 44/46, on the basis of information provided by them.

[A/AC.105/C.1/WG.6/L.4, para. 7 deleted]

7. [See A/AC.105/C.1/WG.6/L.4, para. 8]
